

WHAT IS CLAIMED IS:

1. A method of making an organogel comprising:

5 combining a compatibilizer with an organic solvent to form a mixture of the compatibilizer in the organic solvent;

adding a particulate additive to the compatibilizer-organic solvent mixture, wherein addition of the particulate additive increases the viscosity of the compatibilizer-

10 organic solvent mixture to form the organogel.

2. The method of claim 1, wherein the compatibilizer comprises one or more surfactants.

3. The method of claim 1, wherein the compatibilizer comprises one or more organic salts.

15 4. The method of claim 1, wherein the compatibilizer comprises one or more cationic surfactants.

5. The method of claim 1, wherein the compatibilizer comprises one or more cationic surfactants, and wherein the particulate additive comprises one or more cations capable of exchanging with one or more of the cationic surfactants.

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6. The method of claim 1, wherein the compatibilizer comprises one or more anionic surfactants.

25 7. The method of claim 1, wherein the compatibilizer comprises one or more anionic surfactants, and wherein the particulate additive comprises one or more anions capable of exchanging with one or more of the anionic surfactants.

8. The method of claim 1, wherein the compatibilizer comprises one or more non-ionic surfactants.

5 9. The method of claim 1, wherein the compatibilizer comprises one or more amphoteric surfactants.

10. The method of claim 1, wherein the compatibilizer comprises one or more quaternary ammonium compounds.

10 11. The method of claim 1, wherein the particulate additive comprises one or more clays.

12. The method of claim 1, wherein one or more of the clays comprise one or more phyllosilicates.

15 13. The method of claim 1, wherein the particulate additive comprises one or more smectite clays.

14. The method of claim 1, wherein the particulate additive comprises one or more synthetic phyllosilicate clays.

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15. The method of claim 1, wherein the particulate additive comprises hydrotalcite.

16. The method of claim 1, wherein the particulate additive comprises one or more fatty acids or fatty acid derivatives.

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17. The method of claim 1, wherein the particulate additive comprises one or more polyacrylates.

18. The method of claim 1, wherein the particulate additive comprises one or more polyethylene glycols.

19. The method of claim 1, wherein the particulate additive comprises silica.

20. The method of claim 1, wherein the particulate additive comprises one or more carbohydrates
5 or polycarbohydrates.

21. The method of claim 1, wherein the organic solvent comprises a hydrocarbon solvent.

22. The method of claim 1, wherein the organic solvent comprises a siloxane solvent.

23. The method of claim 1, wherein the organic solvent comprises a halogenated hydrocarbon
10 solvent.

24. The method of claim 1, wherein the organic solvent comprises an ester solvent.

25. The method of claim 1, wherein the organic solvent comprises an aromatic hydrocarbon
15 solvent.

26. The method of claim 1, wherein the organic solvent comprises a ketone solvent.

27. The method of claim 1, wherein the organic solvent comprises an amine solvent.

28. The method of claim 1, wherein the organic solvent comprises an ether solvent.

29. The method of claim 1, wherein the organic solvent comprises an alcohol solvent.

30. The method of claim 1, wherein the organic solvent comprises a mixture of two or more of: a
hydrocarbon solvent, a halogenated hydrocarbon solvent, a siloxane solvent, a ketone solvent, an
ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

31. The method of claim 1, wherein the organogel comprises between about 0.1 wt% to about 10 wt% of the particulate additive.

5 32. The method of claim 1, wherein the compatibilizer is soluble in the organic solvent.

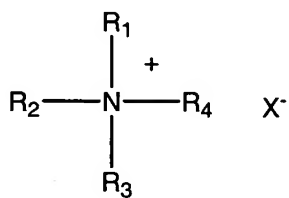
33. A method of making an hydrocarbon organogel comprising:

10 combining one or more quaternary ammonium compounds with a hydrocarbon solvent to form a mixture of the one or more quaternary ammonium compounds in the hydrocarbon solvent;

15 adding one or more clays to the quaternary ammonium compounds-hydrocarbon solvent mixture, wherein addition of one or more clays increases the viscosity of the quaternary ammonium compounds-hydrocarbon solvent mixture to form the hydrocarbon organogel.

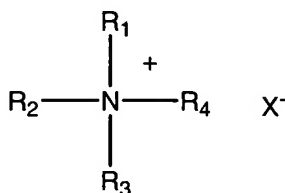
34. The method of claim 33, wherein one or more clays comprise one or more cations capable of exchanging with one or more of the quaternary ammonium compounds.

20 35. The method of claim 33, wherein one or more of the quaternary ammonium compounds have the structure:



wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl groups, and wherein at least one of R₁, R₂, R₃, or R₄ is an aliphatic group derived from a naturally occurring oil.

- 5 36. The method of claim 33, wherein one or more of the quaternary ammonium compounds have the structure:



- 10 wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl groups, and wherein at least one of R₁, R₂, R₃, or R₄ is an aliphatic group derived from tallow.

- 15 37. The method of claim 33, wherein one or more of the clays comprise one or more smectite clays.

38. The method of claim 33, wherein one or more of the clays comprise one or more phyllosilicates.

- 20 39. The method of claim 33, wherein one or more of the clays comprise one or more synthetic phyllosilicate clays.

40. The method of claim 33, wherein one or more of the clays comprise hydrotalcite.

- 25 41. The method of claim 33, wherein one or more of the clays comprise a montmorillonite.

42. The method of claim 33, wherein one or more of the clays comprise a synthetic layered silicate.

43. The method of claim 33, wherein the hydrocarbon solvent comprises an aromatic hydrocarbon.

44. The method of claim 33, wherein the hydrocarbon solvent further comprises one or more of: a hydrocarbon solvent, a halogenated hydrocarbon solvent, a siloxane solvent, a ketone solvent, an ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

45. The method of claim 33, wherein the organogel comprises between about 0.1 wt% to about 10 wt% of the clay.

46. The method of claim 33, wherein one or more quaternary ammonium compounds are soluble in the hydrocarbon solvent.

47. The method of claim 33, wherein the hydrocarbon solvent comprises toluene and wherein the at least one quaternary ammonium compound comprises a hydrogenated tallow quaternary ammonium compound, and wherein at least one clay comprises a phyllosilicate clay.

48. A method of making a silicone organogel comprising:

combining one or more quaternary ammonium compounds with a silicone solvent to form a mixture of the one or more quaternary ammonium compounds in the silicone solvent;

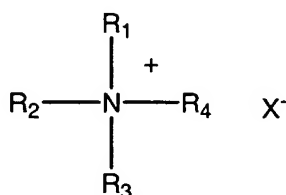
adding one or more clays to the quaternary ammonium compounds-silicone solvent mixture, wherein addition of one or more clays increases the viscosity of the

quaternary ammonium compounds-silicone solvent mixture to form the silicone organogel.

49. The method of claim 48, wherein one or more clays comprise one or more cations capable of
5 exchanging with one or more of the quaternary ammonium compounds.

50. The method of claim 48, wherein one or more of the quaternary ammonium compounds
comprises a polysiloxane quaternary ammonium compound.

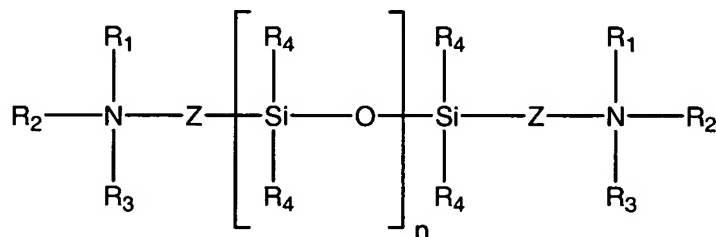
10 51. The method of claim 48, wherein one or more of the quaternary ammonium compounds have
the structure:



15 wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl
groups, and wherein at least one of R₁, R₂, R₃, or R₄ is a polysiloxane group.

52. The method of claim 48, wherein one or more of the quaternary ammonium compounds have
the structure:

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wherein R₁, R₂, R₃, are independently alkyl groups, aryl groups, arylalkyl groups, alkyl alcohols, alkyl amines, or alkyl amides and wherein each R₄ is independently methyl or hydrogen, and wherein n is 2 - 100, and wherein Z is an alkyl, aryl arylalkyl, alkyl alcohol, or ether group linking the amine functionality to the siloxane functionality.

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53. The method of claim 48, wherein one or more of the clays comprise one or more smectite clays.

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54. The method of claim 48, wherein one or more of the clays comprise one or more phyllosilicates.

55. The method of claim 48, wherein one or more of the clays comprise one or more synthetic phyllosilicate clays.

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56. The method of claim 48, wherein one or more of the clays comprise hydrotalcite.

57. The method of claim 48, wherein one or more of the clays comprise a montmorillonite.

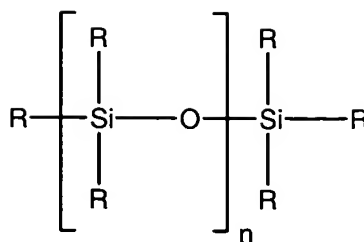
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58. The method of claim 48, wherein one or more of the clays comprise a synthetic layered silicate.

59. The method of claim 48, wherein the silicone solvent comprises a polysiloxane solvent.

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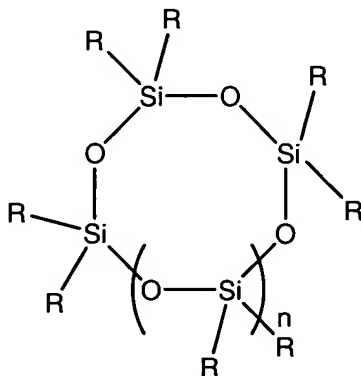
60. The method of claim 48, wherein the silicone solvent comprises a polysiloxane solvent having the formula:



where each R is independently C1-C4 alkyl and n is 2 to 100.

5 61. The method of claim 48, wherein the silicone solvent comprises a cyclosiloxane solvent.

62. The method of claim 48, wherein the silicone solvent comprises a cyclosiloxane solvent having the formula:



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where each R is independently C1-C4 alkyl or phenyl, and n is 1 to 10.

63. The method of claim 48, wherein the silicone solvent further comprises one or more of: a
15 hydrocarbon solvent, a halogenated hydrocarbon solvent, a ketone solvent, an ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

64. The method of claim 48, wherein the organogel comprises between about 0.1 wt% to about
20 10 wt% of the clay.

65. The method of claim 48, wherein one or more quaternary ammonium compounds are soluble in the silicone solvent.

66. The method of claim 48, wherein the silicone solvent comprises a cyclosiloxane solvent and wherein the at least one quaternary ammonium compound comprises a polysiloxane quaternary ammonium compound, and wherein at least one clay comprises a phyllosilicate clay.

67. An organogel made by the process comprising:

10 combining a compatibilizer with an organic solvent to form a mixture of the compatibilizer in the organic solvent;

adding a particulate additive to the compatibilizer-organic solvent mixture, wherein addition of the particulate additive increases the viscosity of the compatibilizer-organic solvent mixture to form the organogel.

68. An hydrocarbon organogel made by the process comprising:

20 combining one or more quaternary ammonium compounds with a hydrocarbon solvent to form a mixture of the one or more quaternary ammonium compounds in the hydrocarbon solvent;

adding one or more clays to the quaternary ammonium compounds-hydrocarbon solvent mixture, wherein addition of one or more clays increases the viscosity of the quaternary ammonium compounds-hydrocarbon solvent mixture to form the hydrocarbon organogel.

69. A silicone organogel made by the process comprising:

combining one or more quaternary ammonium compounds with a silicone solvent to form a mixture of the one or more quaternary ammonium compounds in the silicone solvent;

5 adding one or more clays to the quaternary ammonium compounds-silicone solvent mixture, wherein addition of one or more clays increases the viscosity of the quaternary ammonium compounds-silicone solvent mixture to form the silicone organogel.

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70. A method of making an organogel comprising:

combining a particulate additive with an organic solvent to form a mixture of the particulate additive in the organic solvent;

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adding a compatibilizer to the particulate additive-organic solvent mixture, wherein addition of the compatibilizer increases the viscosity of the particulate additive-organic solvent mixture to form the organogel.

20 71. The method of claim 70, wherein the compatibilizer comprises one or more surfactants.

72. The method of claim 70, wherein the compatibilizer comprises one or more organic salts.

25 73. The method of claim 70, wherein the compatibilizer comprises one or more cationic surfactants.

74. The method of claim 70, wherein the compatibilizer comprises one or more cationic surfactants, and wherein the particulate additive comprises one or more cations capable of exchanging with one or more of the cationic surfactants.

75. The method of claim 70, wherein the compatibilizer comprises one or more anionic surfactants.

5 76. The method of claim 70, wherein the compatibilizer comprises one or more anionic surfactants, and wherein the particulate additive comprises one or more anions capable of exchanging with one or more of the anionic surfactants.

10 77. The method of claim 70, wherein the compatibilizer comprises one or more non-ionic surfactants.

78. The method of claim 70, wherein the compatibilizer comprises one or more amphoteric surfactants.

15 79. The method of claim 70, wherein the compatibilizer comprises one or more quaternary ammonium compounds.

80. The method of claim 70, wherein the particulate additive comprises one or more clays.

20 81. The method of claim 70, wherein one or more of the clays comprise one or more phyllosilicates.

82. The method of claim 70, wherein the particulate additive comprises one or more smectite clays.

25 83. The method of claim 70, wherein the particulate additive comprises one or more synthetic phyllosilicate clays.

84. The method of claim 70, wherein the particulate additive comprises hydrotalcite.

85. The method of claim 70, wherein the particulate additive comprises one or more fatty acids or fatty acid derivatives.

5 86. The method of claim 70, wherein the particulate additive comprises one or more polyacrylates.

87. The method of claim 70, wherein the particulate additive comprises one or more polyethylene glycols.

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88. The method of claim 70, wherein the particulate additive comprises silica.

89. The method of claim 70, wherein the particulate additive comprises one or more carbohydrates or polycarbohydrates.

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90. The method of claim 70, wherein the organic solvent comprises a hydrocarbon solvent.

91. The method of claim 70, wherein the organic solvent comprises a siloxane solvent.

20 92. The method of claim 70, wherein the organic solvent comprises a halogenated hydrocarbon solvent.

93. The method of claim 70, wherein the organic solvent comprises an ester solvent.

25 94. The method of claim 70, wherein the organic solvent comprises an aromatic hydrocarbon solvent.

95. The method of claim 70, wherein the organic solvent comprises a ketone solvent.

96. The method of claim 70, wherein the organic solvent comprises an amine solvent.

97. The method of claim 70, wherein the organic solvent comprises an ether solvent.

5 98. The method of claim 70, wherein the organic solvent comprises an alcohol solvent.

99. The method of claim 70, wherein the organic solvent comprises a mixture of two or more of:
a hydrocarbon solvent, a halogenated hydrocarbon solvent, a siloxane solvent, a ketone solvent,
an ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

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100. The method of claim 70, wherein the organogel comprises between about 0.1 wt% to
about 10 wt% of the particulate additive.

101. The method of claim 70, wherein the compatibilizer is soluble in the organic solvent.

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102. A method of making a hydrocarbon organogel comprising:

combining one or more clays with a hydrocarbon solvent to form a mixture of the one
or more clays in the hydrocarbon solvent;

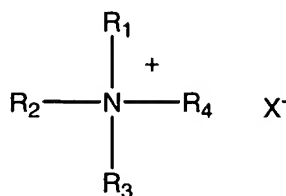
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adding one or more quaternary ammonium compounds to the clay-hydrocarbon
solvent mixture, wherein addition of one or more quaternary ammonium compounds
increases the viscosity of the clay-hydrocarbon solvent mixture to form the
hydrocarbon organogel.

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103. The method of claim 102, wherein one or more clays comprise one or more cations
capable of exchanging with one or more of the quaternary ammonium compounds.

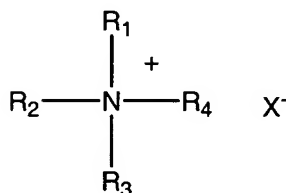
104. The method of claim 102, wherein one or more of the quaternary ammonium compounds have the structure:



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wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl groups, and wherein at least one of R₁, R₂, R₃, or R₄ is an aliphatic group derived from a naturally occurring oil.

10 105. The method of claim 102, wherein one or more of the quaternary ammonium compounds have the structure:



15 wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl groups, and wherein at least one of R₁, R₂, R₃, or R₄ is an aliphatic group derived from tallow.

20 106. The method of claim 102, wherein one or more of the clays comprise one or more smectite clays.

107. The method of claim 102, wherein one or more of the clays comprise one or more phyllosilicates.

108. The method of claim 102, wherein one or more of the clays comprise one or more synthetic phyllosilicate clays.

109. The method of claim 102, wherein one or more of the clays comprise hydrotalcite.

110. The method of claim 102, wherein one or more of the clays comprise a montmorillonite.

111. The method of claim 102, wherein one or more of the clays comprise a synthetic layered silicate.

112. The method of claim 102, wherein the hydrocarbon solvent comprises an aromatic hydrocarbon.

113. The method of claim 102, wherein the hydrocarbon solvent further comprises one or more of: a hydrocarbon solvent, a halogenated hydrocarbon solvent, a siloxane solvent, a ketone solvent, an ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

114. The method of claim 102, wherein the organogel comprises between about 0.1 wt% to about 10 wt% of the clay.

115. The method of claim 102, wherein one or more quaternary ammonium compounds are soluble in the hydrocarbon solvent.

116. The method of claim 102, wherein the hydrocarbon solvent comprises toluene and wherein the at least one quaternary ammonium compound comprises a hydrogenated tallow quaternary ammonium compound, and wherein at least one clay comprises a phyllosilicate clay.

117. A method of making a silicone organogel comprising:

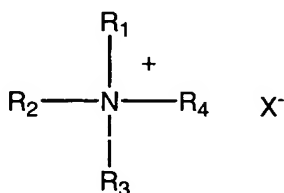
combining one or more clays with a silicone solvent to form a mixture of the one or more clays in the silicone solvent;

adding one or more quaternary ammonium compounds to the clay-silicone solvent mixture, wherein addition of one or more quaternary ammonium compounds increases the viscosity of the clay-silicone solvent mixture to form the silicone organogel.

118. The method of claim 117, wherein one or more clays comprise one or more cations capable of exchanging with one or more of the quaternary ammonium compounds.

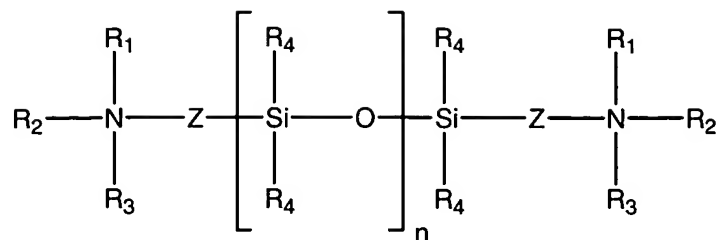
119. The method of claim 117, wherein one or more of the quaternary ammonium compounds comprises a polysiloxane quaternary ammonium compound.

120. The method of claim 117, wherein one or more of the quaternary ammonium compounds have the structure:



wherein R₁, R₂, R₃, and R₄ are independently alkyl groups, aryl groups or arylalkyl groups, and wherein at least one of R₁, R₂, R₃, or R₄ is a polysiloxane group.

121. The method of claim 117, wherein one or more of the quaternary ammonium compounds have the structure:



wherein R₁, R₂, R₃, are independently alkyl groups, aryl groups, arylalkyl groups, alkyl
alcohols, alkyl amines, or alkyl amides and wherein each R₄ is independently methyl or
5 hydrogen, and wherein n is 2 - 100, and wherein Z is an alkyl, aryl arylalkyl, alkyl
alcohol, or ether group linking the amine functionality to the siloxane functionality.

122. The method of claim 117, wherein one or more of the clays comprise one or more
smectite clays.

123. The method of claim 117, wherein one or more of the clays comprise one or more
phyllosilicates.

124. The method of claim 117, wherein one or more of the clays comprise one or more
15 synthetic phyllosilicate clays.

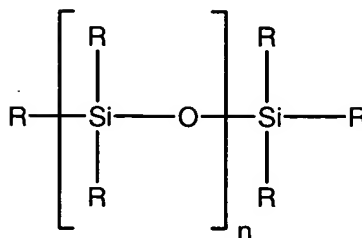
125. The method of claim 117, wherein one or more of the clays comprise hydrotalcite.

126. The method of claim 117, wherein one or more of the clays comprise a montmorillonite.

127. The method of claim 117, wherein one or more of the clays comprise a synthetic layered
silicate.

128. The method of claim 117, wherein the silicone solvent comprises a polysiloxane solvent.

129. The method of claim 117, wherein the silicone solvent comprises a polysiloxane solvent having the formula:

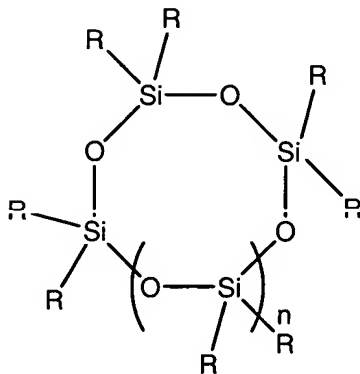


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where each R is independently C1-C4 alkyl and n is 2 to 100.

130. The method of claim 117, wherein the silicone solvent comprises a cyclosiloxane solvent.

10 131. The method of claim 117, wherein the silicone solvent comprises a cyclosiloxane solvent having the formula:



15 where each R is independently C1-C4 alkyl or phenyl, and n is 1 to 10.

132. The method of claim 117, wherein the silicone solvent further comprises one or more of: a hydrocarbon solvent, a halogenated hydrocarbon solvent, a ketone solvent, an ester solvent, an ether solvent, an amine solvent, and an alcohol solvent.

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133. The method of claim 117, wherein the organogel comprises between about 0.1 wt% to about 10 wt% of the clay.

134. The method of claim 117, wherein one or more quaternary ammonium compounds are soluble in the silicone solvent.

135. The method of claim 117, wherein the silicone solvent comprises a cyclosiloxane solvent and wherein the at least one quaternary ammonium compound comprises a polysiloxane quaternary ammonium compound, and wherein at least one clay comprises a phyllosilicate clay.

136. An organogel made by the process comprising:

combining a particulate additive with an organic solvent to form a mixture of the particulate additive in the organic solvent;

adding a compatibilizer to the particulate additive-organic solvent mixture, wherein addition of the compatibilizer increases the viscosity of the particulate additive-organic solvent mixture to form the organogel.

137. A hydrocarbon organogel made by the process comprising:

combining one or more clays with a hydrocarbon solvent to form a mixture of the one or more clays in the hydrocarbon solvent;

adding one or more quaternary ammonium compounds to the clay-hydrocarbon solvent mixture, wherein addition of one or more quaternary ammonium compounds increases the viscosity of the clay-hydrocarbon solvent mixture to form the hydrocarbon organogel.

138. A silicone organogel made by the process comprising:

combining one or more clays with a silicone solvent to form a mixture of the one or more clays in the silicone solvent;

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adding one or more quaternary ammonium compounds to the clay-silicone solvent mixture, wherein addition of one or more quaternary ammonium compounds increases the viscosity of the clay-silicone solvent mixture to form the organogel.